UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: October 1, 2007

SUBJECT: Chemical Recovery Systems, Inc., Documentation to Explain Why the Capital Cost for the Selected Remedy printed in the Proposed Plan Increased when presented in Record of Decision

FROM: Gwendolyn S. Massenburg, RPM

TO: Chemical Recovery Systems-Site File

The purpose of this memorandum is to document why the estimated Total Present Worth Cost for the Selected Remedy ($2,056,762) presented in the 2007 Record of Decision differed from the Estimated Total Present Worth Cost ($1,740,000) for the same Selected Remedy presented in the July 2007 Proposed Plan Factsheet. A detailed cost estimate showed the Total Present Worth Cost should have been $1, 857882.90, before the cost of the Pre-Design, additional wells were added.

The Proposed Plan Factsheet for Chemical Recovery System (CRS) site was sent out to the public on July 13, 2007. On July 19, 2007, the CRS-PRP Site group, who also received a copy of the Proposed Plan Factsheet called and questioned if the Capital Cost for the proposed selected remedy was correct. They stated that the costs were too low and perhaps we did not consider the additional costs associated with the soil density for off-site disposal of the contaminated material. I contacted our START contractor who did agree that the cost printed in Proposed Plan did not consider the adjustment for the density of soil to be disposed. The CRS-PRP site group also pointed out a typographical error in the amount of soil proposed to be excavated from the site. During that same call, it was also pointed out that the cost for the additional monitoring wells proposed to be installed during the pre-design studies as well as the associated construction quality assurance supporting materials should be included in the cost estimate for the proposed remedy.

To that end, it should be noted that the costs for the pre-design/design documents, additional monitoring wells, the Construction Quality Assurance, and the Health and Safety documentation would increase costs for all alternatives, except for the No Action Alternative, in the estimated amount of $179,388.000. Therefore, the selected remedy remains cost-effective when the increased amount for the additional monitoring wells is added to all alternatives. The cost for the Selected Remedy, $2.1 million is considered to be more accurate, and within the range of +50%/-30%, typical of Superfund program remedial action cost estimates.

The Proposed Plan Fact sheet reported approximately 14,400 cubic yards would be excavated. The correct amount of soil proposed to be excavated was approximately 3,500 cubic yards. On July 28, 2007, during the public meeting, corrections were presented for both the amount of soil proposed to be excavated, and the correct remedy cost estimate. Attached to this memo are the following documents:

- One spreadsheet (dated September 2007), shows a line item comparison between the Proposed Plan Fact sheet remedy cost estimate, and the corrected remedy cost estimate, reported in the 2007 Record of Decision (ROD);
- The second spreadsheet (dated July 2007), shows a line item comparison between the selected remedy costs estimate presented by the CRS-PRP site group, to the selected remedy costs estimate presented by the Agency for presented in the 2007 ROD, and
- Table 1 showing the additional Pre-design cost added to all Alternatives.

Attachments

cc: Thomas Nash, ORC
Joan Tanaka, Chief, RRS#4

	A	B	C	D	E	F
1	**CHEMICAL RECOVERY SYSTEM SITE**					
2	**ELYRIA, LORAINE COUNTY, OHIO**					
3	**COST ESTIMATE FOR EXCAVATION**					
4	**Activity**	**Description**	**Quantity**	**Original Cost**	**Revised Cost**	**Comments**
5	**Transportation and Disposal**[1,2]		3,500 yd3[a,b]	$272,832.00	$341,040.00	density to 1.5 ton/yd3 soil
6	**Analytical**[c,d]	VOC	30 * $100/sample	$3,000.00	$10,000.00	
7		TCLP VOC	10 * $200/sample	$2,000.00	$2,000.00	
8	**Subcontractors**					
9	Asbestos Survey[3]		1 LS	$6,000.00	$6,000.00	
10	Asbestos Removal[3]		1 LS	$100,000.00	$100,000.00	
11	Demolition[3]	Warehouse and building	1 LS	$100,000.00	$100,000.00	
12	Crushing of foundations[3]		1 LS	$35,000.00	$35,000.00	
13	Clearing and Grubbing[3]		2.5 acres	$13,750.00	$13,750.00	
14	Fencing[4]		1,300 linear feet	$27,900.00	$27,900.00	
15	Deed restriction[3]		1 LS	$2,000.00	$2,000.00	
16	Sewer replacement[3]		1 LS	$12,000.00	$12,000.00	
17	Regrade of river slope[3]		1 LS	$2,300.00	$2,300.00	
18	Erosion control matting[5]		2,300 SF	$690.00	$690.00	
19	Hydroseeding[5]		109,000 SF	$4,905.00	$4,905.00	
20	Snow Fencing[6]		109,000 SF	$29,250.00		
21						
22	***Equipment***[e,f]	excavator	1 X 2 months	$9,000.00	$9,000.00	
23		dozer	1 x 1 month	$3,500.00	$3,500.00	Dozer for soil cover
24		loader	1 X 1 months	$3,500.00	$3,500.00	
25		mob/demob	2X $500 X 2	$2,000.00	$2,000.00	
26		office trailer	1 for 3 months	$600.00	$600.00	
27		Multi-Rae	3 month rental	$1,614.00	$1,614.00	
28		PDR (Dust Monitor)	4 for 1 month rental	$2,728.00	$2,728.00	
29		PDRs	1 for 2 month rental	$1,364.00	$1,364.00	
30		fuel	$150 per day	$9,000.00	$9,000.00	
31	**Workers**[e,f]					
32	2 operators for 3 weeks	operators regular	2X40/week X 3 weeks	$12,480.00	$12,480.00	
33		OT	2X20/week X 3 weeks	$7,920.00	$7,920.00	
34	1 operator for 8 weeks	operators regular	1X40/week X 8 weeks	$16,640.00	$16,640.00	
35		OT	1X20/week X 8 weeks	$10,560.00	$10,560.00	
36	1 RM	RM	1X60/week X 11 weeks	$42,900.00	$42,900.00	
37	1 clerk	Clerk	1X40/week X 11 weeks	$15,840.00	$15,840.00	
38		OT	1X20/week X 11 weeks	$9,900.00	$9,900.00	
39	2 technicians for 3 weeks	technician	2X40/week X 3 weeks	$10,080.00	$10,080.00	
40		OT	2X20/week X 3 weeks	$6,360.00	$6,360.00	
41	1 technicians for 8 weeks	technician	1X40/week X 8 weeks	$13,440.00	$13,440.00	
42		OT	1X20/week X 8 weeks	$8,480.00	$8,480.00	
43	1 EPA/contractor	EPA/contractor oversight	1X60/week X 11 weeks	$66,000.00	$66,000.00	
44	travel days	1/day for mob/demob/person	5 hrs one way	3440	$3,440.00	
45						
46	**Backfill**	Backfill soil Analytical[g]	1	$2,000.00	$2,000.00	
47		2-foot clean soil[7]	11,625 yd3	$104,625.00	$104,625.00	
48	**Travel**	hotel[8]	7 days X11 weeks/person	$46,200.00	$46,200.00	
49		per diem[8]	7 days X11 weeks/person	$24,948.00	$24,948.00	
50		vehicle	4 X 70 X7*11	$21,560.00	$21,560.00	
51	**Miscellaneous**					
52	Project Setup, procurement	Field clerk	3 weeks	$675.00	$675.00	
53	staging area construction			$2,000.00	$2,000.00	
54	utilities	month	3 months	$600.00	$600.00	
55	haul road construction			$300.00	$300.00	
56	Demarcation liner installed				$30,000.00	for snowfence liner
57	well construction	6 wells	$10k per well		$60,000.00	construction cost
58	other misc items			$5,000.00	$5,000.00	
59	Total			$1,116,939.00	$1,212,839.00	
60	10% Contingency			$111,693.90	$121,283.90	
61	Grand Total			$1,228,632.90	$1,334,122.90	
62	5% Predesign and Engineering Design Work				$66,706.15	predesign and design
63	2% Construction Quality Assurance and Health & Safety Oversight				$26,682.46	Construction QA and H&S
64	**Capital Cost**			$1,228,632.90	$1,427,511.50	
65	Annual O&M cost[3]			$50,000.00	$50,000.00	
66	the first four years			$20,000.00	$20,000.00	
67	**Present Worth of O&M**					
68	Projected for 30 years at 8% return			$563,000.00	$563,000.00	
69	Projected for 4 years at 8% return			$66,250.00	$66,250.00	
70	**Present Worth of O&M**				$629,250.00	
71	**Capital Cost + Present Worth of O&M**			**$1,857,882.90**	**$2,056,761.50**	
72						
73	See Assumptions and notes on the next page					
74						

	A	B	C	D	E	F
75	**Assumptions**					
76	a. Soil estimate is assuming 0.5 acre and excavating an average of 4 feet deep across the 0.5 acre hotspot. Soil density is assumed to be 1 15 tons per cubic yard					
77	b. Soil is assumed to be 75% non-hazardous and that 25% will fail TCLP or 10 X LDR requirements					
78	c. 10 TCLP sample would be collected from excavated soil for disposal analysis					
79	d. 30 cleanup confirmation samples would be collected					
80	e. Work week = 12 hours / day X 5 days/ week					
81	f. Site work would take 11 weeks assuming 7 trucks per day will make trips to the landfill					
82	g. 1 clean soil sample from the vendor would be would be analyzed prior to backfilling on the site.					
83						
84	**Notes**					
85	1. Transportation and disposal cost for non-haz soil is based on the quote from Waste Management showing $22.77/ton for disposal, $16/ton for transportation of non-haz soil, plus fuel surcharge and $4/truck environmental fee.					
86	2. Transportation and disposal cost for haz soil is based on the quote from EQ showing $80/ton for disposal, $36/ton for transportation for 10 X LDR soil and $110/ton and $36/ton for haz soil. Haz soil and 10 X LDR soil are assumed to be present at a ratio of 1:1. The disposal for 10 X LDR and Hazardous Waste was averaged for $95/ton for disposal.					
87	3. Costs for asbestos survey, asbestos removal, demolition of buildings, removal of foundations, clearing and grubbing, deed restriction, sewer replacement/plugging, regrade of slope to river, annual O&M cost and rate of return for total present worth calculation were taken from the Parsons Cost Estimate.					
88	4. Cost for fencing estimation was given by Elyria Fence Inc. for a 8ft chainlink fence at $21/linear foot plus $600 for the gate. Elyria Fence Inc indicated that permanent fencing within the Elyria city limits would require black vinyl coating and would probably triple the costs.					
89	5. Great Lakes Hydroseeding Construction gave the cost estimate for erosion control matting plus seeding to be $0.3/ Square foot and hydroseeding with tactifier at $0.045/square foot.					
90	6. Snow fence would be used to cover the top of the entire property before installing a 2-foot cap with clean soil. Cost for snowfencing estimation was obtained from Discount Fence Supply, Inc. for a 4ft X 100ft snow fence at $70 including shipping. Cost for snow fence installation was assumed to be $10,000.					
91	7. Backfill quantity is estimated to cover a 2-foot cap on the 2.5-acre property, Gregory Trucking, Inc. gave a quote of $90 per truck, with a truck delivering 11 Cubic yards.					
92	8. Federal hotel and per diem rates for this area were used for this cost estimate.					
93	Cost estimates prepared by STN Environmental, JV, under START contract EP-S5-06-03 and TDD number S05-0701-001.					

July 25, 2007

Ms. Gwendolyn Massenburg
Remedial Project Manager
U.S. Environmental Protection Agency Region 5
77 West Jackson Boulevard
Chicago, IL 60604

Subject: Cost Estimate for Soil Excavation and Soil Cover
Chemical Recovery System Site
142 Locust Street
Elyria, OH

Dear Ms. Massenburg:

T N & Associates, Inc. (TN&A), a member of the STN Environmental Joint Venture with Sullivan International Group, Inc., has revised the cost estimate for excavation and soil cover alternative, as proposed in the Remedial Investigation Report by Parsons Engineering, dated August 2006. This cost estimate is prepared in accordance with the requirements of U.S. Environmental Protection Agency (U.S. EPA) Technical Direction Document (TDD) No. S05-0701-001 for the Chemical Recovery System Site, located in Elyria, Ohio. The revised estimate is updated with the costs for alternative design, treatment & disposal, monitoring well construction and O&M for 30 years. TN&A's cost estimates are provided in Attachment A.

If you have any questions or comments, please contact me at 312/220-7000.

Sincerely,

Raghu Nagam

Raghu Nagam
Project Manager

Attachment A - TN&A Cost Estimates

APPENDIX A

T N & A Cost Estimates

(2 Pages)

CHEMICAL RECOVERY SYSTEM SITE
ELYRIA, LORAIN COUNTY, OHIO
USEPA COST ESTIMATE FOR EXCAVATION AND SOIL COVER PROPOSED PLAN REMEDY

Disclaimer -- changes made to this cost estimate by persons associated with the CRS Site Group are intended to correct errors in the original cost estimate prepared by EPA's contractor for the Proposed Plan. The CRS Site Group and its members do not endorse or accept this cost estimate or the proposed remedy and our input into this process does not waive or in any way compromise current or future positions with regard to remedy issues and site costs. All costs are estimates based on assumptions that are subject to change and the purpose of this exercise is to generate a single total cost number for public consideration.

EPA Contractor takes exception to this statement as we believe that our cost estimates are realistic and are based on our extensive experience working on remediation sites under U.S. EPA Region 5

Activity	Description	Quantity	Cost	EPA Cost	Comments
Transportation and Disposal		3,500 yd3	$341,040.00	$341,040.00	START adjusted soil density to 1.5 ton/yd3 soil
Analytical	Final Sampling	20 * $500/sample	$10,000.00	$10,000.00	
	Disposal Characterization	*10 * $200/sample*	$2,000.00	$2,000.00	
Subcontractors					
Asbestos Survey[1]		1 LS	$6,000.00	$6,000.00	
Asbestos Removal[1]		1 LS	$100,000.00	$100,000.00	
Demolition[1]	Warehouse and building	1 LS	$100,000.00	$100,000.00	
Crushing of foundations[1]		1 LS	$35,000.00	$35,000.00	
Clearing and Grubbing[1]		2.5 acres	$13,750.00	$13,750.00	
Fencing[2]		*1,300 linear feet*	$27,900.00	$27,900.00	
Deed restriction[1]		1 LS	$2,000.00	$2,000.00	
Sewer replacement[1]		1 LS	$12,000.00	$12,000.00	
Regrade of river slope[1]		1 LS	$2,300.00	$2,300.00	
Erosion control matting[3]		2,300 SF	$690.00	$690.00	
Hydroseeding[3]		109,000 SF	$4,905.00	$4,905.00	
Equipment[4,5]	excavator	1 X 3 months	$13,500.00	$9,000.00	START calculated for 2 months rental
	dozer	1 x 1 month	$3,500.00	$3,500.00	Dozer for soil cover
	loader	1 X 2 months	$7,000.00	$3,500.00	START calculated for 1 month rental
	mob/demob	3X $500 X 2	$3,000.00	$2,000.00	Mob/Demob only for two equipments
	office trailer	1 for 3 months	$600.00	$600.00	
	Multi-Rae	3 month rental	$1,614.00	$1,614.00	
	PDR (Dust Monitor)	4 for 2 month rental	$5,456.00	$2,728.00	START calculated for 1 month rental
	PDRs	*1 for 2 month rental*	$1,364.00	$1,364.00	
	fuel	$150 per day	$9,000.00	$9,000.00	
Workers[4,5]					
2 operators for 3 weeks	operators regular	2X40/week X 6 weeks	$24,960.00	$12,480.00	START calculated for 3 weeks
	OT	2X20/week X 6 weeks	$15,840.00	$7,920.00	START calculated for 3 weeks
1 operator for 6 weeks	operators regular	1X40/week X 9 weeks	$18,720.00	$16,640.00	START calculated for 8 weeks
	OT	1X20/week X 9 weeks	$11,880.00	$10,560.00	START calculated for 8 weeks
1 RM	RM	1X60/week X 12 weeks	$46,800.00	$42,900.00	START calculated for 11 weeks
1 clerk	Clerk	1X40/week X 12 weeks	$17,280.00	$15,840.00	START calculated for 11 weeks
	OT	1X20/week X 12 weeks	$10,800.00	$9,900.00	START calculated for 11 weeks
2 technicians for 3 weeks	technician	2X40/week X 6 weeks	$20,160.00	$10,080.00	START calculated for 3 weeks
	OT	2X20/week X 6 weeks	$12,720.00	$6,360.00	START calculated for 3 weeks
1 technicians for 6 weeks	technician	1X40/week X 9 weeks	$15,120.00	$13,440.00	START calculated for 8 weeks
	OT	1X20/week X 9 weeks	$9,540.00	$8,480.00	START calculated for 8 weeks
1 EPA/contractor	EPA/contractor oversight	1X60/week X 12 weeks	$72,000.00	$66,000.00	START calculated for 11 weeks
travel days	1/day for mob/demob/person	5 hrs one way	$3,440.00	$3,440.00	
Backfill	Backfill soil Analytical[6]	1	$2,000.00	$2,000.00	
	2-foot clean soil[7]	*12,000 yd3*	$108,000.00	$104,625.00	*START calculated for 11,625 yd3*
Travel	hotel[8]	7 days X12 weeks/person	$37,800.00	$46,200.00	START calculated for 11 weeks (from 9 weeks projected in our last estimate)for 6 persons
	per diem[4]	7 days X12 weeks/person	$20,412.00	$24,948.00	START calculated for 11 weeks for 6 persons
	vehicle	5 X 70 X7*12	$23,520.00	$21,560.00	START calculated for 11 weeks for 4 vehicles
Miscellaneous					
Project Setup, procurement	Field clerk	3 weeks	$675.00	$675.00	
staging area construction			$2,000.00	$2,000.00	
utilities	month	3 months	$600.00	$600.00	
haul road construction			$300.00	$300.00	
Demarcation liner installed			$90,000.00	$30,000.00	START estimated $30,000 for snowfence liner
well construction	6 wells	$10k per well	$60,000.00	$60,000.00	START adjusted for well construction cost
other misc items			$5,000.00	$5,000.00	
Total			$1,332,186.00	$1,212,839.00	
10% Contingency			$133,218.60	$121,283.90	
Grand Total			$1,465,404.60	$1,334,122.90	
Capital Cost			$1,465,404.60	$1,334,122.90	
10% Predesign and Engineering Design Work			$146,540.46	$66,706.15	START estimated 5% for predesign and design
10% Construction Quality Assurance and Health & Safety Oversight			$146,540.46	$26,682.46	*START estimated 2% for Construction QA and H&S*
Annual O&M cost[1]	100,000 per year				
Present Worth of O&M (*projected for 30 years at 8% return*)[1]			**$1,126,000.00**	**$629,250.00**	START calculated Present Worth of O&M with an annual O&M cost of $50,000 for 30 years and an additional annual O&M cost of $20,000 for the first four years
Capital Cost + Present Worth of O&M			**$2,884,485.52**	**$2,056,761.50**	

See Assumptions and notes on the next page

7/25/2007

Assumptions

a. Transportation and Disposal estimate assumes 0.5 acres excavated to 4 feet. Soil density is assumed to be 1.5 tons per cubic yard.

b. Soil is assumed to be 75% non-hazardous and that 25% will fail TCLP or 10 X LDR requirements

c. Work week = 12 hours / day X 5 days/ week

d. Site work would take 9-11 weeks assuming 7 trucks per day will make trips to the landfill

I. TCLP samples would be collected from excavated soil for disposal analysis

g. 30 site soil samples to be collected for determining VOC concentrations that will remain on site

h. Transportation and disposal cost for non-haz soil is based on the quote from Waste Management showing $22.77/ton for disposal, $16/ton for transportation of non-haz soil, plus fuel surcharge and $4/truck environmental fee

i. Transportation and disposal cost for haz soil is based on the quote from EQ showing $80/ton for disposal, $36/ton for transportation for 10 X LDR soil and $110/ton and $36/ton for haz soil. The disposal for 10 X LDR and Hazardous Waste was averaged for $95/ton for disposal

j. Backfill quantity is estimated to cover a 2-foot cap on the 2.5-acre property + 4 feet on 0.5 acres, Gregory Trucking, Inc. gave a quote of $90 per truck, with a truck delivering 11 Cubic yards

k. The EPA/contractor oversight cost item is limited to the on-site observation of the construction of the remedy and does not include EPA past costs, EPA oversight costs for the Remedial Design, Remedial Action, and Operation and Maintenance, nor does it include administrative and legal costs associated with the site.

Notes

1. Costs for asbestos survey, asbestos removal, demolition of buildings, removal of foundations, clearing and grubbing, deed restriction, sewer replacement/plugging, regrade of slope to river, annual O&M cost and rate of return for total present worth calculation were taken from the Parsons Cost Estimate. Additional annual O&M Cost of $20,000 were added for the first four years to reflect additional monitoring requirements that were not in Parsons Cost Estimate. Sampling and analysis costs, which may initially exceed the average annual cost, are expected to decline after two years when the monitoring frequency can move from quarterly to semi-annually and the number of wells sampled may be reduced.

2. Cost for fencing estimation was given by Elyria Fence Inc. for a 8ft chainlink fence at $21/linear foot plus $600 for the gate. Elyria Fence Inc indicated that permanent fencing within the Elyria city limits would require black vinyl coating and would probably triple the costs

3. Great Lakes Hydroseeding Construction gave the cost estimate for erosion control matting plus seeding to be $0.3/ Square foot and hydroseeding with tackifier at $0.045/square foot

4. Work week = 12 hours / day X 5 days/ week

5. Site work is estimated to take 9-12 weeks

6. 1 clean soil sample from the vendor would be would be analyzed prior to backfilling on the site

7. Backfill quantity is estimated to cover a 2-foot cap on the 2.5-acre property + 4 feet of fill in the 0.5 acre excavation area, Gregory Trucking, Inc. gave a quote of $90 per truck, with a truck delivering 11 Cubic yards

8. Federal hotel and per diem rates for this area were used for this cost estimate

Cost estimates prepared by STN Environmental, JV, under START contract EP-S5-06-03 and TDD number S05-0701-001 with input from Parsons Engineering under contract with the CRS Site Group

Table 1 Pre-Design Cost Added to all Alternatives Except the No Action Alternative

Evaluation Criteria	Alternatives						
	Additional Cost Added to all Alternatives for the Pre-design Additional Well Placement						
	1	2	3	4	5	6	7
1. Overall Protection of Human Health & the Environment	▭	◗	◗	◗	◗	◗	◗
2. Compliance with ARARs	▭	◗	◗	◗	◗	◗	◗
3. Long-Term Effectiveness and Permanence	▭	■	■	■	■	◗	◗
4. Reduction of Toxicity, Mobility, of Volume Through Treatment	▭	▭	▭	▭	▭	◗	◗
5. Short-Term Effectiveness	▭	■#	■#	■#	■#	■#	■#
6. Implementability	▭	◗	◗	◗	◗	◗	◗
7. Cost -- Capital Construction Cost (including 30-yr. operation & maintenance period of a minimum of 30 years; approx. $70,000 1st 4years, then $50,000 annually)	$0	$1.34 Million + $179,388 Cost with new wells $1,519,388	$1.25 Million + $179,388 Cost with new wells $1,429,388	$1.35 Million + $179,388 Cost with new wells $1,529,388	$1.40 Million + $179,388 Cost with new wells $1,579,388	$1.90 Million + $179,388 Cost with new wells $2,079,388	$7.91 Million/ $24Million* + $179,388 Cost with new wells $8,089,388/ $25,179,388
8. State Acceptance	▭	◗	◗	◗	◗	◗	◗
9. Community Acceptance	TBD	TBD	TBD	TBD	TBD	TBD	TBD

▭ Does not meet criteria

■ Partially meets criteria

◗ Fully meets criteria

TBD to be determined after comment period

#Dust produced during demolition, excavation and re-grading of the CRS-Site is temporary with short-term exposure.

*Smaller amount is the cost for disposal at a solid waste facility; larger amount is the cost for disposal at a hazardous waste facility.

A Soil Vapor Extraction (SVE) treatment system was also evaluated to treat the "hotspot" area located in the NW corner. It was determined that selection of the SVE remedy had a high potential for being inefficient and problematic.